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RESEARCH ARTICLE

# Balancing Acts Between Ancient and Modern Cities: The Ancient Greek Cities Project of C. A. Doxiadis

Mantha Zarmakoupi\*

This paper examines the inception and development of the Ancient Greek Cities (AGC) research project (1963–77) of Constantinos A. Doxiadis and addresses the novelty of its methodological approach to the study of classical urbanism. With the AGC project, Doxiadis launched a comprehensive study of the ancient Greek built environment to provide an overview of the factors involved in its shaping. The project produced 24 published volumes — the first two laying out the historical and methodological parameters of the ensuing 22 monographs with case studies — as well as 12 unpublished manuscripts, and through international conferences initiated a wider dialogue on ancient cities beyond the classical Greek world. It was the first interdisciplinary study that attempted to tackle the environmental factors, together with the social and economic ones, underpinning the creation, development and operation of ancient Greek cities. Doxiadis's innovative approach to the analysis of the ancient city was indebted to his practice as an architect and town planner and was informed by his theory of Ekistics. His purpose was to identify the urban planning principles of ancient Greek settlements in order to employ them in his projects. This paper examines the concept and methodology of the AGC project as well as the ways in which Doxiadis used the study of ancient cities in relation to his contemporary urban/architectural agendas, and explains this important moment in the historiography of ancient Greek urbanism.

## Introduction

In the 1960s Constantinos A. Doxiadis was already established as an expert on housing and urban development and was well known amongst American and international urban planning and development circles. The Greek architect and planner had been a government official between 1937 and 1950, as the coordinator of post-war reconstruction as well as the administrator of the Marshall Plan aid to Greece — a career that was abruptly interrupted in 1950, prompting him to found his private firm of consulting engineers (Doxiadis Associates) in 1953.<sup>1</sup> By 1963, his private practice had been engaged in important international development projects beyond Greece: housing projects in Iraq (1955–58), the restructuring of the plan of Homs in Syria (1959) and the planning of the new capital in Pakistan (1960), among others.<sup>2</sup>

When Doxiadis launched the Ancient Greek Cities (AGC) research project in 1963, he was not only running his private firm but since 1958, also a non-profit, privately sponsored research and educational institution for technology and science — the Athens Technological Organization (ATO) and Athens Technological Institute (ATI) — where he was teaching the science of ekistics. In addition, in 1963 Doxiadis had just founded the Athens Center of Ekistics (ACE), as part of ATI, to 'serve as the principal setting for

education and exchange of ideas in all aspects of theory and practice related to human settlements and ekistic development'.<sup>3</sup>

Doxiadis coined the term 'ekistics', deriving from the Greek noun *oikos* (οἶκος), 'home, habitat', and the verbs *oiko* (οἰκῶ [οἰκέω]), 'to live in' and (οἰκίζω), 'to settle in',<sup>4</sup> to signify the science of human settlements as a new field of study. He conceived of the human settlement as a living organism having its own laws and defined by five key elements: Nature, Anthropos (Man), Society, Shells and Networks — a theory that he first formulated in 1946 (Doxiadis 1946a) and further articulated and analysed in his book *Ekistics: An Introduction to the Science of Human Settlements* (Doxiadis 1968: 21–43). By conceptualizing the study of human settlements as a science, Doxiadis aimed to respond to the totality of human needs across cultural, geographic and socioeconomic differences in a holistic manner (Philippidis 2015: 111–137). For Doxiadis the natural and man-made areas were interdependent and needed to be conceptualized as a whole, in order to develop a balanced coexistence between the two (Pyla 2002: 32–51, 111–114, 121–130; Pyla 2009: 7–11, 17–21; Khan Mahsud 2004; Khan Mahsud 2010: 8–10).

Doxiadis's approach and commitment to urban industrialization was hardly innovative, as it was influenced by post-war trends in regional planning with their critique of the simplistic application of pre-war ideas of the Congrès internationaux d'architecture moderne (CIAM<sup>5</sup>). He was inspired by CIAM's post-war debate on the habitat and Gropius's (1955) notion of total architecture.<sup>6</sup> His theory

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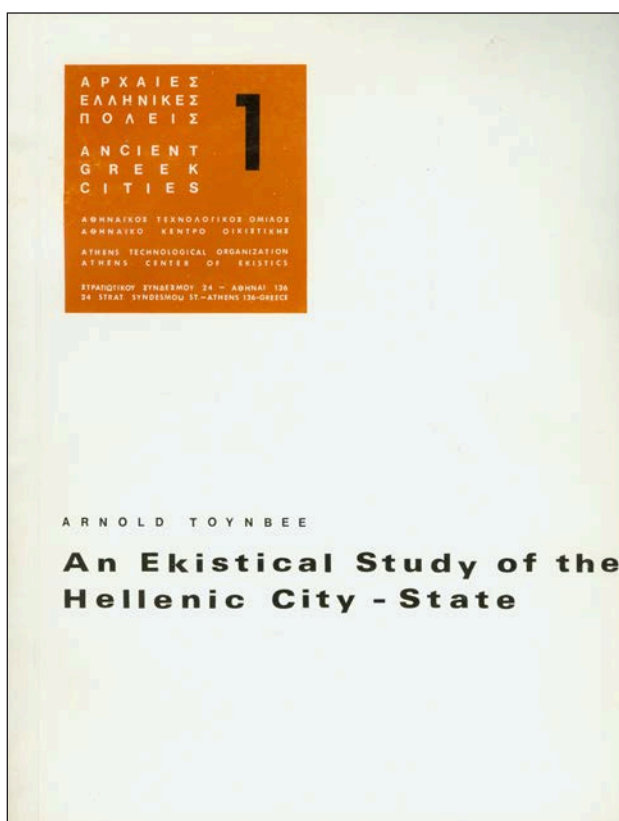
of ekistics embraced contemporary environmental concerns and drew on the philosophical and methodological structure of human ecology, defined in the early 1920s (Pyla 2002: 85–88). Doxiadis was influenced by Patrick Geddes's attempts to associate urban and social analyses in a comprehensive research model and engaged in the contemporary discourse on biological analogies in architecture (e.g., Kenzo Tange, the Metabolists, Constant Nieuwenhuis and Archigram), in his overall formulation of ekistics. He extended Geddes's theories to propose that human settlements are complex biological systems, whose growth is dependent on the multiple patterns of mobility made available by numerous overlapping networks (Wigley 2001: 87–88, 104–111; Zavoleas 2013: 181–190). The theory of ekistics was grounded in concepts of community far removed from Le Corbusier's modernism and, as Panayiota Pyla (2002; 2009) has argued, prefiguring today's sustainability. Through ekistics, Doxiadis promoted a scientific interdisciplinary model of urbanism that united development with environmental protection (Pyla 2002: 149–154; 2009: 17–28; Khan Mahsud 2010: 10–29; Khan 2011: 36–45).

By combining an active practice with a series of research programs, Doxiadis aimed to blend theory and pragmatism (Khan Mahsud 2010: 11; Philippidis 2015: 131–137). For Doxiadis, research was a plan of action. The founding of the Athens Center of Ekistics (ACE) in 1963 signalled this strategy, whereby the four research programs informed the formulation of the interdisciplinary model of ekistical urbanism. The four main research projects of the Athens Center of Ekistics were the City of the Future (begun in 1960), Human Community (begun in 1961), Capital of Greece (begun in 1964) and Ancient Greek Cities (begun in 1963). As Myrto Antonopoulou-Bogdanou (2003) has aptly pointed out, these four research projects covered the entire spectrum of time: past, present, and future.

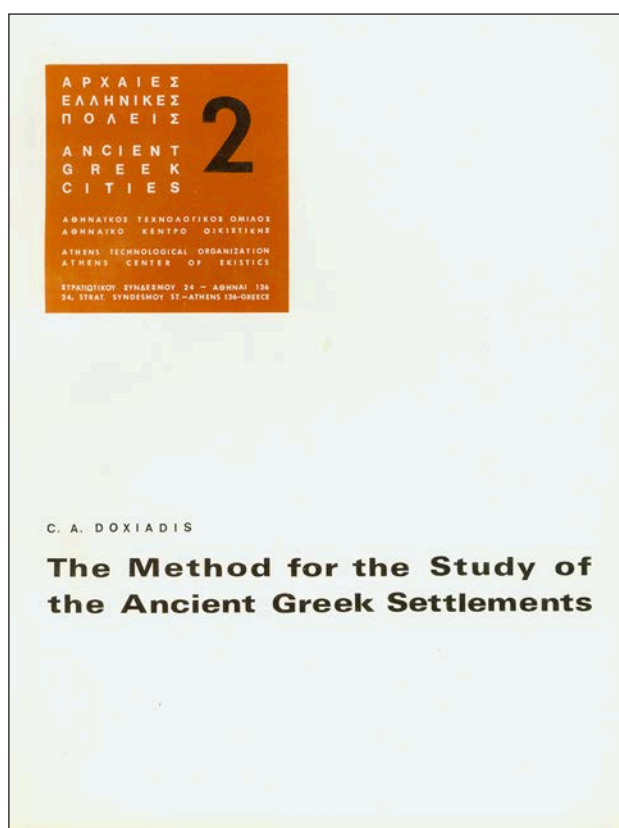
### Research as a Plan of Action: The AGC Research Project

The AGC research project formally commenced in 1963, together with the establishment of the independent research organization Athens Center of Ekistics (ACE) that year. The program produced both published monographs (e.g., **Figs. 1, 2**) as well as unpublished ones (which reside in the Doxiadis Archives).<sup>7</sup> The first two volumes laid out the historical and methodological parameters of the ensuing volumes, which focused on case studies of ancient Greek cities. In addition, two issues of *Ekistics* – the journal of ACE – were dedicated to cities of the past, presenting ongoing research of the project as well as papers of the international conferences organised in conjunction with the project.<sup>8</sup>

It is clear that by pursuing the Ancient Greek Cities (AGC) research project, Doxiadis was not merely interested in understanding a distant past. As Panayotis Tournikiotis (2000, 2004 and 2009: 228) and Kostas Tsiambaos (2009: 267–71; 2010: esp. 23–58) have pointed out, the starting point of Doxiadis's interest was the challenge that problems of contemporary cities posed. Doxiadis believed that the study of the ancient Greek city could provide modern architects and urban planners the means to deal with



**Figure 1:** Cover of the first volume of the AGC Project (Toynbee 1971).



**Figure 2:** Cover of the second volume of the AGC Project (Doxiadis 1972b).

these problems. In his book on the science of human settlements (i.e., ekistics), Doxiadis assessed the evolution of human settlements – from their most primitive

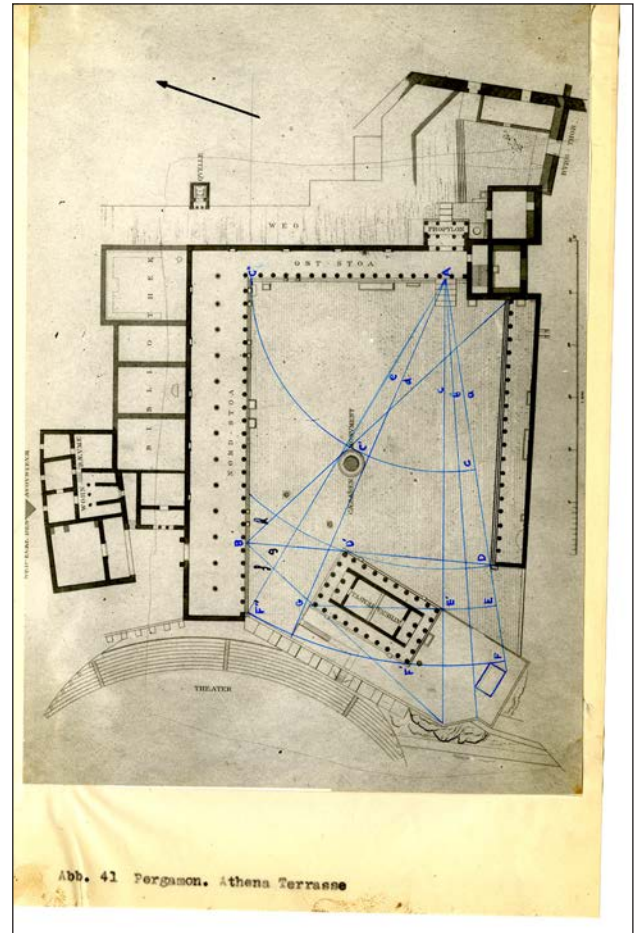


phase to the present-day megalopolis (e.g., Doxiadis 1968: 343–363) – to identify their pathology and, through an interdisciplinary approach that he deemed necessary for solving their problems, propose their ‘therapy’ (Doxiadis 1968: 403–413, ‘ekistic therapy’). By studying ancient settlements, Doxiadis wanted to identify the parameters by which city and nature coexisted harmoniously in the past, so as to reintroduce such rules in the modern metropolis (Pyla 2002: 75–83; 2009: 7–10). With the AGC project, Doxiadis showcased the ways in which interdisciplinary research may offer new tools and techniques to fight the problems of modernity. In this sense, the AGC project is paradigmatic of the project of modernity and its effort to legitimise its actions through the study and implementation of scientifically proven tools (Tsiambaos 2009: 269–71).

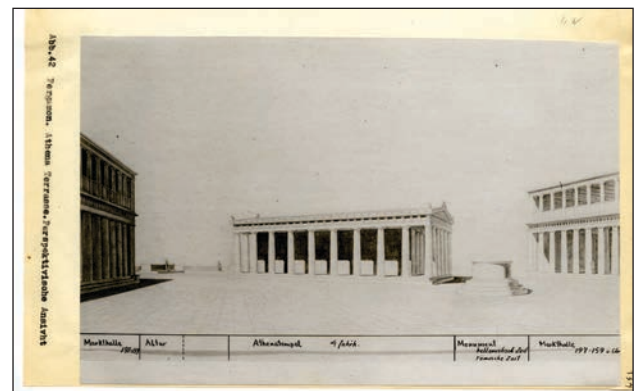
The research project on Ancient Greek Cities began as a thought in 1962, at a time when Doxiadis was conducting research on his books *Ekistics: An Introduction to the Science of Human Settlements* (Doxiadis 1968) and *Ecumenopolis: The Inevitable Future of the City* (Doxiadis and Papaioannou 1974).<sup>9</sup> The project was originally conceived as the continuation of his doctoral dissertation on ancient Greek city planning, submitted in 1936 in Berlin,<sup>10</sup> as well as other relevant publications (Doxiadis 1937b, 1938a, 1938b, 1956), which he wanted to complete at this point and publish again with the help of an archaeologist.<sup>11</sup> Research began in 1963, but the project’s scope changed in January 1964, when Doxiadis decided to have two different projects: the revision of his doctoral dissertation on the architectural composition of ancient Greek cities, in order to be published in English, and a separate research project on the ‘Ancient City’.<sup>12</sup> Although Doxiadis referred generally to the ‘Ancient City’, he specified that research would focus on ancient Greek cities because their political and social structures as well as other aspects of their organisation are well known,<sup>13</sup> and used the headings ‘Ancient City’ and ‘Ancient Greek City’ interchangeably to refer to the project.

In his 1936 thesis, Doxiadis sought to define the principles that govern the composition of monumental ancient Greek architectural complexes from the 7th to the 2nd century BCE. He suggested that their architectural composition was conceived on the basis of a polar coordinate system, the centre of which was the entry point of an architectural ensemble – where for the first time the entire space of the architectural ensemble was perceived by an observer (Figs. 3, 4). By analysing the composition of Greek architectural sites, Doxiadis’s aim was to trace the main outlines of a system of design (Doxiadis 1972a: 3).<sup>14</sup> Doxiadis admitted that his analysis was based on a hypothetical theoretical approach (Doxiadis 1972a: 3). In fact, his model of analysis points to his personal understanding and perception of ancient Greek space, rather than a proven theory (Tsiambaos 2009: 257–259; 2010: 23–58). With its modernist approach to ancient planning principles, which perceived monumental ancient Greek urban complexes through the panoptic vision of a modern viewer (Tsiambaos 2009: 268–271), Doxiadis’s thesis is exemplary of the local response to the international modern aesthetic of the interwar period that Greek

artists and architects formulated in the years after the 4th CIAM Conference (see Plantzos 2014: 286; Tzirtzilakis 2014: 48–52).



**Figure 3:** Plan analysis of the terrace of the temple of Athena (4th c. BCE) in Pergamon in the doctoral thesis of Doxiadis (1937a: Fig. 41). The entry point of the architectural ensemble (point A) – where for the first time the entire space is perceived by an observer – is the centre of the polar coordinate system. Constantinos A. Doxiadis Archives, File 18552. © Constantinos and Emma Doxiadis Foundation.



**Figure 4:** Perspectival view of the temple of Athena (4th c. BCE) in Pergamon from point A – the centre of the polar coordinate system in Fig. 3 – in the doctoral thesis of Doxiadis (1937a: fig. 42). Constantinos A. Doxiadis Archives, File 18552. © Constantinos and Emma Doxiadis Foundation.

Doxiadis's dissertation was the only project in his life that dealt with a purely theoretical issue, without any connection to practical matters. The great accomplishment of his doctoral dissertation was that, with his theory, Doxiadis proved that an ingenuous hypothesis would accomplish more than any scientifically proven truth – something that can be demonstrated by the numerous theoretical enquiries into ancient Greek urban and landscape design it has inspired (see, most recently, Iliopoulou 2012 and 2014; and discussion in Tsiambaos 2010: 55–59). For Doxiadis, 'an original hypothesis, right or wrong in its details, is essential in the process of scientific research: only after its initiation is there an incentive to test its accuracy' (Doxiadis 1972a: 3). It is therefore not surprising that after over 20 years Doxiadis revisited his doctoral research study. The time was ripe to test but also, as we will see, supersede his hypothesis in his overarching plan to employ research as a tool for the formulation of an interdisciplinary model of ekistical urbanism.

### Changing Places: The Ancient Greek City and the Symposia of Delos

The birth of the idea of dedicating a distinct project on the ancient Greek city sheds light on the ways in which Doxiadis conceptualized the study of the past and integrated it in his projects. The trigger for this seems to have been the 6th International Congress of the European Cultural Foundation, which was going to be held in Athens in May 1964. Doxiadis intended to make a presentation in this congress that would prove the ways in which the ancient city can provide information for the city of the present.<sup>15</sup> It is in preparation for this conference that the distinct study on the ancient Greek city was initiated. In this conference, Doxiadis presented a paper entitled 'The Ancient Greek, and the City of the Present' and organised an exhibition on the same subject (Figs. 5, 6).<sup>16</sup>

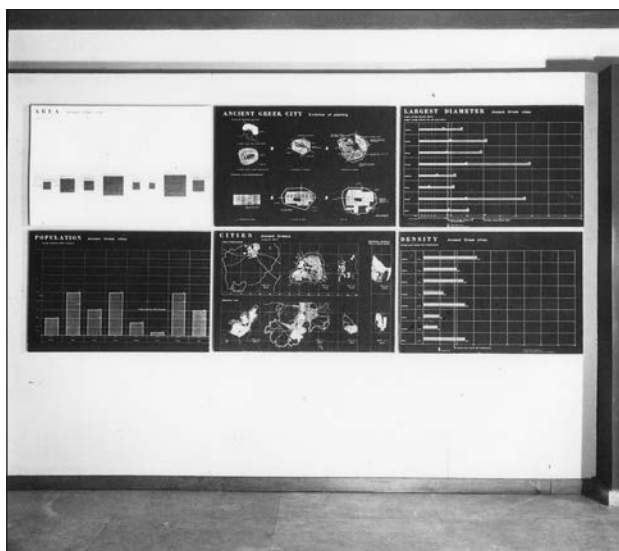
The revival of Doxiadis's interest in the ancient Greek city at this time was not only expressed in the research he directed towards the completion and republication of his thesis. During the same period, he organised the first Symposium of Delos,<sup>17</sup> which took place in 1963. There were eleven more Symposia, which were held from 1964 to 1975 and undoubtedly contributed to the development of the research project on the Ancient Greek City.<sup>18</sup> With the Symposia of Delos, Doxiadis attempted to launch an international interdisciplinary discussion on the current state of human settlements, a condition that is deteriorating rapidly, as noted in the first 'Declaration of Delos' (Fig. 7).<sup>19</sup>

The Symposia brought together what *Time* magazine called 'brilliant, informed, influential people' to exchange new ideas about urban crises around the world (Ludson 1969: 59).<sup>20</sup> The choice of Delos as the place where these meetings concluded indicates the ways in which Doxiadis approached, understood – or in other words, perceived – ancient Greek cities.

The Symposia of Delos had been conceived as a continuation of the 4th CIAM conference in 1933 (Pyla 2002: 114–121) – the first organised discussion of the modern movement about the city and urban planning the results



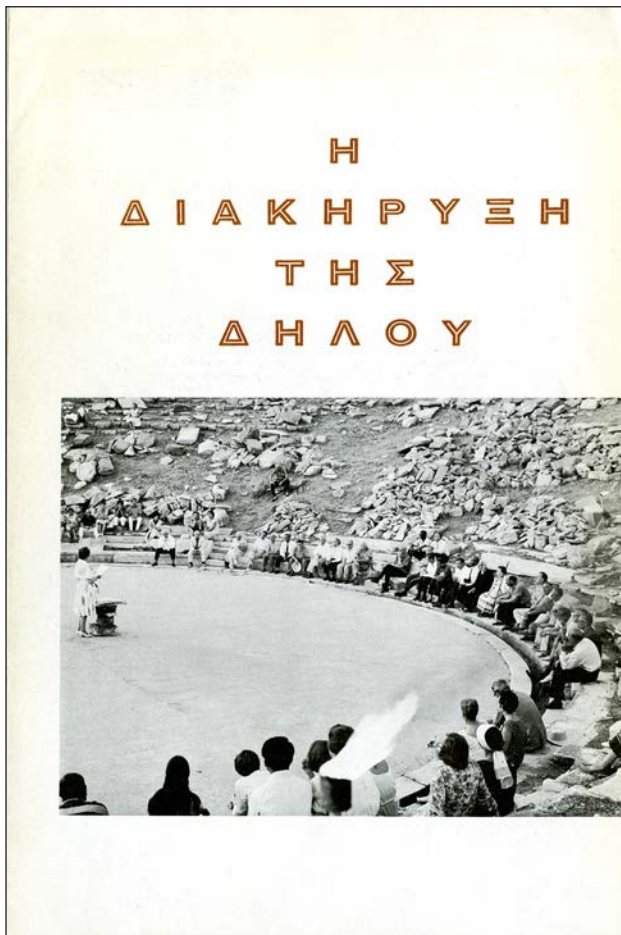
**Figure 5:** Photograph from the exhibition *The Ancient Greek City and the City of the Present*. Constantin A. Doxiadis Archives, Photographs, File 29612a. © Constantin and Emma Doxiadis Foundation.



**Figure 6:** Photograph from the exhibition *The Ancient Greek City and the City of the Present*. Constantin A. Doxiadis Archives, Photographs, File 29612c. © Constantin and Emma Doxiadis Foundation.

of which were codified by Le Corbusier in the historic *La Charte d'Athènes* (*Charter of Athens*; see Mumford 1992: 392–394). Doxiadis must have been present at the 4th CIAM conference; during the same years he translated Le Corbusier's *Précisions*.<sup>21</sup> The conceptualisation of the first Symposium of Delos as a continuity of the 4th CIAM Conference in 1933 and Le Corbusier's Charter of Athens can be seen in the earliest documented correspondence (8.5.58) of Doxiadis with his colleagues, Jaqueline Tyrwhitt and John Piperoglou, where he talks about a conference for architects and planners along with other scientists on Delos during which 'the Charter of Delos





**Figure 7:** First Declaration of Delos (1963). Constantinos A. Doxiadis Archives, File 32398. © Constantinos and Emma Doxiadis Foundation.

on the science of Ekistics' will be formulated and signed (Figs. 7, 8).<sup>22</sup> The analogy between the *Charter of Athens* and the *Declaration of Delos* was clearly spelled out by Doxiadis in a letter written on April 22, 1963 to Jacqueline Tyrwhitt, asking her to draft a text for the first Symposium of Delos:

As we are going to refer often to the Charter of Athens and to the Meeting of Athens in 1933, I beg you to prepare an objective statement of no more than 5 or 6 pages on the Athens meeting, incorporating at the end the Charter of Athens with a few words on its inception and preparation, how the meeting took place, on whose initiative, on the attendance, on the discussions, on its importance and on its effects. I imagine you would like to speak about CIAM, too.<sup>23</sup>

The analogy to the 4th CIAM conference was clear and Doxiadis's intention was to make things better: a meeting in the ancient standards of a Greek banquet (symposium), rather than a simple conference, to be held aboard a ship called *New Hellas* – not *Patris II* [*Homeland II*] – and conclude at the deserted ancient city of Delos – not in modern Athens that showed the failure of existing cities that the meeting aimed to address.



**Figure 8:** Final preparation before signing the First Declaration of Delos in July 1963; from left: Edmund Bacon, Jacqueline Tyrwhitt and Constantinos Doxiadis. Constantinos A. Doxiadis Archives, Photographs, File 31252. © Constantinos and Emma Doxiadis Foundation.

Whereas the 4th CIAM conference focused on the modern city, however, the Symposia of Delos placed the relationship of the ancient with the present city at the centre of the discussion. This relationship was further underlined by the selection of the site, where the final discussion of the meetings took place: the island of Delos – that is, the archaeological site of Delos. Doxiadis explained the reasons behind the choice of Delos ten years after the first Symposium, in a prologue to a book that was intended to summarize the conclusions of the Symposia of Delos but was left unfinished due to his death in 1975:

We had to go to places without problems in order not to be influenced by any local problem and be really objective and we had to finish in the quietest<sup>24</sup> possible one. Quietest<sup>25</sup> meant with no inhabitants either enjoying or suffering from anything and this was the island of Delos, right in the middle of the Aegean Sea without any single inhabitant,<sup>26</sup> only with ruins.<sup>27</sup>

Indeed, the participants walked among these ruins like new 'Delians' (Fig. 9) – as Doxiadis himself referred to the participants of the Symposia<sup>28</sup> – in search of new concepts and approaches for the design of the city of the present, in July 1963, as well as in the following Symposia that until 1972 concluded on Delos.

The choice of Delos as the place where the meetings ended is a symbolic paradox, but indicative of the ways in which Doxiadis employed historical information to craft his very own approach to contemporary architecture and urbanism. In the proposal that was drafted after the first meeting of Delos for the continuation of the meetings, Doxiadis related the choice of Delos to the historical circumstances of the site of Delos. Delos was the ideal place because it 'was seat of the ancient Athenian confederation which united the Hellenized settlements of the East with those of the mainland of Greece and the Western Mediterranean in Sicily, Marseilles and Spain'.<sup>29</sup>



**Figure 9:** View of the Theatre District as the new 'Delians' reach the ancient theatre of Delos on July 12, 1963. Constantinos A. Doxiadis Archives, Photographs, File 34172, no. 496. © Constantinos and Emma Doxiadis Foundation.

The fact that Delos, as a place (or *topos*), had played an important geopolitical role, uniting the East and West,<sup>30</sup> appealed to Doxiadis. In the same proposal he continues: 'The Charter of Delos would represent the community of interest, resource and talent among all nations of East and West, North and South, developed and less developed'.<sup>31</sup>

The relationship of the ancient with the contemporary city was at the centre of the discussions that occurred during the Delos Symposia. Besides, Jacqueline Tyrwhitt, who translated Doxiadis's doctoral thesis into English and edited its publication by The MIT Press (Doxiadis 1972a), actively participated in the conception and execution of these meetings (cf. **Fig. 7**). In addition, Arnold Toynbee, who served as the scientific advisor of the Ancient Greek Cities project and wrote the introductory volume of the AGC series (Toynbee 1971), participated since 1965 in most of the Symposia of Delos (**Fig. 10**). In fact, Doxiadis invited Toynbee to comment on the methodology of the Ancient Greek Cities research project after his first participation in the 3rd Symposium of Delos in 1965.<sup>32</sup> It is clear in the correspondence following the 4th Symposium of Delos (1966) that during these meetings Doxiadis discussed with Toynbee about the research programme on ancient cities.<sup>33</sup>

It was after the completion of the first Symposium of Delos, in January 1964, that Doxiadis decided to create a separate research project on the Ancient City, distinct from the research conducted for his book, in order to 'create a collection . . . of designs from the ancient city, in an appropriate scale and with the proper presentation . . . in order to prove the ways in which the ancient city can provide information for the city of the present'.<sup>34</sup> The idea that related



**Figure 10:** Arnold Toynbee addressing the participants of the 5th Symposium of Delos in the ancient theatre of Delos in July 1967. Constantinos A. Doxiadis Archives, Photographs, File 31489. © Constantinos and Emma Doxiadis Foundation.

the ancient with the city of the present was the concept of human scale, which was lost in modern cities:

[I]n the ancient city size, and in general the concept of scale, was in a human scale. . . . The dimensions were such that man could easily walk from one end of the city to the other and could thus feel that the city was made in dimensions relative to him . . . The city of the present has overcome and lost the human dimensions.<sup>35</sup>

In the case of the Symposia of Delos, the ancient city (of Delos) offered for Doxiadis the necessary distance from the problems of the present city to discover the crucial methodological means to address them. In the case of the research project on the Ancient Greek City, the ancient city presented an exemplary paradigm for the relationship of human scale and city scale, the study of which would not only lead to the understanding of the problems of the city of the present but also help to address them.

### Balancing Acts between Ancient and Modern Cities

In his intra-office communication to Alexandros Tombazis, the architect who worked in Doxiadis Associates as Doxiadis's personal assistant in this period, Doxiadis expressed how he intended to use the study of the ancient city for finding ways to resolve the problems of the city of the present:

Our aim is to give to the reader-auditor-viewer an accurate picture of how was the average ancient Greek city in the Classical-Hellenistic period. . . . The general conclusion will be that the current data (or state of affairs) have shattered the scale of the city and they have altered and ruined its texture, and

what we could learn (and this will be the final lesson) from the ancient city is that there is a human scale on the basis of which the problems of the ancient city were solved.<sup>36</sup>

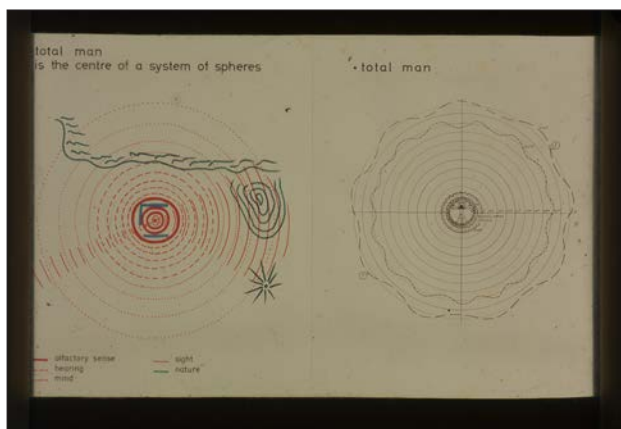
Similarly to the analysis of ancient architectural complexes in his doctoral thesis, which was based on a polar coordinate system, the centre of which was an observer, the analysis of the ancient Greek city – as well as the contemporary one – should be conducted by using a system whose point of reference, or centre, is the human scale. The difference between Doxiadis's doctoral thesis and the AGC project is that whereas the former promotes vision as a methodological tool in order to understand architecture (Tsiambaos 2009: 268), the latter privileges the body as a parameter of design and puts forth the concept of human scale. In his thesis Doxiadis focused on the gaze of a static observer, whereas in the AGC project he analysed the mobile human body – a subject that was no longer inert and whose needs, beyond vision, were now at stake.

Doxiadis further elaborated this idea in his concept of total Anthropos (man) as a system, whose centre was defined by man's body, senses, and mind (Doxiadis 1974: 51–54; **Fig. 11**). Doxiadis's refined notion of human scale followed up on ideas expressed during the Delos Symposia and especially by anthropologist Edward T. Hall, whose concept of the 'human bubble' tackled the six sensory modalities (visual, auditory, kinaesthetic, olfactory, thermal and tactile) as 'measuring scales' for human's interaction with space (**Fig. 12**).<sup>37</sup>

The ways in which the study of the ancient city would enable the understanding of the rules that govern it were expressed in the same intra-office communication to Tombazis:

[W]e will draw some general rules that will allow us to make a presentation of the following type:

- a. In size, the ancient city was that much, an area of 4 sq. km. or 5 to 7 sq. km.
- b. Maximum length that much. Man was able to go across it in this manner.



**Figure 11:** Total man diagram by Doxiadis. Constantinou A. Doxiadis Archives, File 10216. © Constantinou and Emma Doxiadis Foundation.

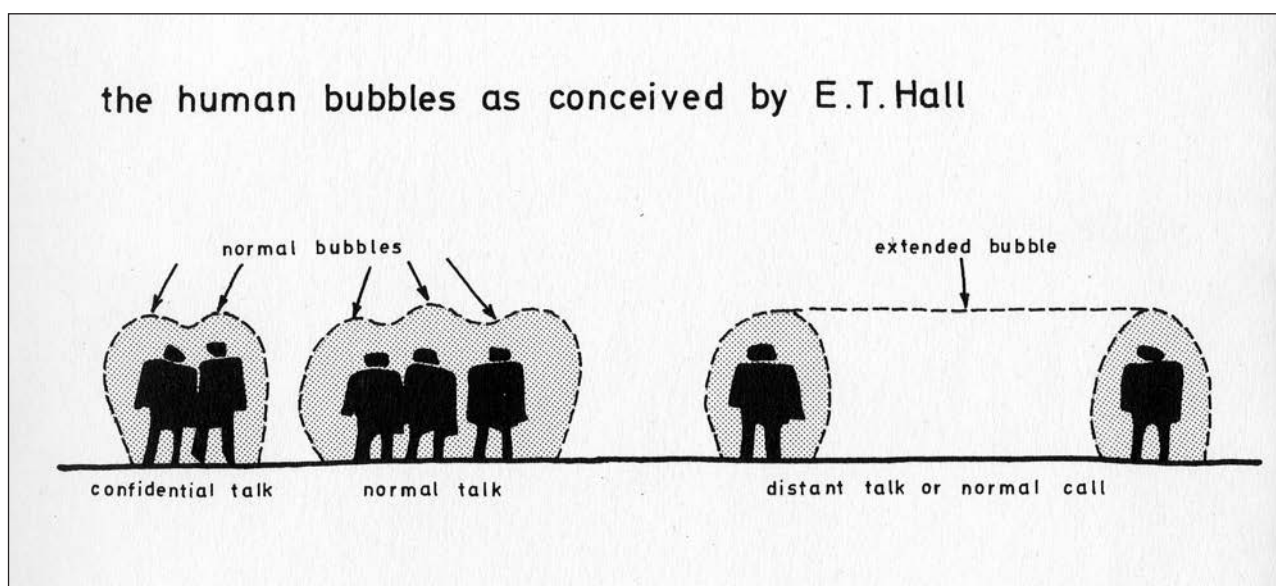
c. Maximum and minimum density so much so that man lived in a scale of this type, which corresponds to the present scale of, for example, Mykonos or Hydra, or any other city that gives a clear picture to what it responds. In this way we will describe the city. We will see the average of the examples mentioned not merely as a statistical average size, but as a *conceptual average size*.<sup>38</sup>

Doxiadis conceptualized 'human scale' in relation to walking distances. A city has a 'human scale' when its size allows its accessibility by walking; thus the scale of the city is limited by walking distances. Therefore, the spatial experience of the citizens should define the design of the city (cf. **Fig. 6**). Furthermore, for Doxiadis, data analysis of the ancient city will not be conducted towards statistical but conceptual ends: the analysis of statistical information will lead to the conceptualization of the information itself. The statistical analysis will not merely provide an average in statistics but a range of conceptual approaches (cf. 'conceptual average size') – or, to paraphrase, a means of understanding the ancient city. Understanding the ancient city and its proportionate design vis-à-vis human scale will in turn lead to the understanding that the human scale has been overcome in the present city. The analysis of the rules governing the ancient city will give, then, the conceptual tools to intervene in the present city. As he further indicates in the same communication to Tombazis, '(ii) It is necessary to find a way to restore this scale in small sizes that will lead in a city of small-scale areas that are encircled by major roadways – like in ISLAMABAD'<sup>39</sup> (**Fig. 13**).

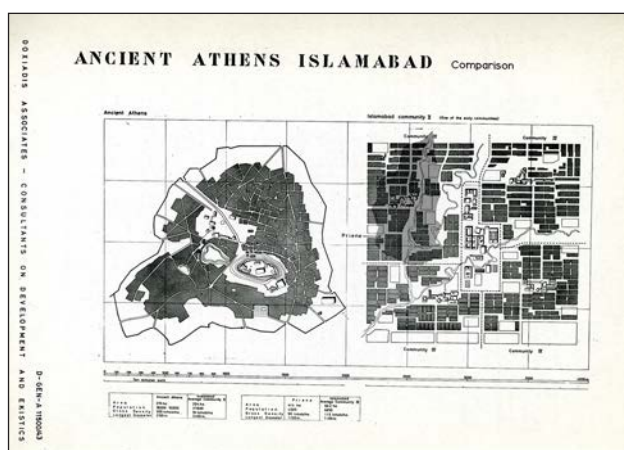
Here it becomes clear how Doxiadis intended to resolve the problems of the modern city: through a kind of collage of urban grids and infrastructures, in which ideal urban clusters 'scaled to humans' would be surrounded by highways. The implementation of such schemes into urban planning was realised in the plans that Doxiadis Associates created for the new capital of Pakistan, Islamabad (1960),<sup>40</sup> and for the town of Aspra Spitia (1961–65), situated on the coast of the Corinthian Gulf (Greece) about one hour's drive from Delphi.<sup>41</sup>

Doxiadis's plan for Islamabad articulated his response, and critique, of the principles of the functional city, which were laid down by the 4th CIAM conference and the *Charter of Athens* and were materialised in Chandigarh and Brasilia (Tournikiotis 2000: 91–94). The plan of Islamabad comprised the new administrative capital, the adjacent existing city of Rawalpindi – which contained all the industrial and wholesale functions necessary to service the capital – and a strip of parkland separating the two. The plan was laid out in an orthogonal grid of sectors, whose size (5,700 feet [1,710 m] by 5,700 feet) and dedicated number of inhabitants (27,600) were analogous to those of the average ancient Greek city (**Fig. 13**).<sup>42</sup> Major transportation and communication networks pass between the sectors, while minor communication networks enter the sectors 'without crossing them and in a way not attracting through-traffic, thus defining three or





**Figure 12:** The concept of the human bubble as conceived by E. T. Hall. Fig. 33 in C. A. Doxiadis's book *Anthropopolis: City for Human Development* (Doxiadis 1974). Constantinos A. Doxiadis Archives, File 6801 © Constantinos and Emma Doxiadis Foundation.



**Figure 13:** Comparison of the plan of Ancient Athens and Islamabad that featured in the presentation and accompanying exhibition, entitled *The Ancient Greek City and the City of the Present*, for the 6th International Congress of the European Cultural Foundation (Athens, May 1964). Constantinos A. Doxiadis Archives, File 2701, D-GEN-A 11500/43. © Constantinos and Emma Doxiadis Foundation.

four human communities within each sector' (Doxiadis 1968: 440–44). Residential sectors could be added along the long wide avenues of the city and highways and industrial sectors would increase so long as parks and green areas – calculated in terms of land percentages – would appease the congested city. In this way, Doxiadis incorporated the qualities of the small-scale city, the human community as he called it, within modern urban settlements (Doxiadis 1968: 433–44).

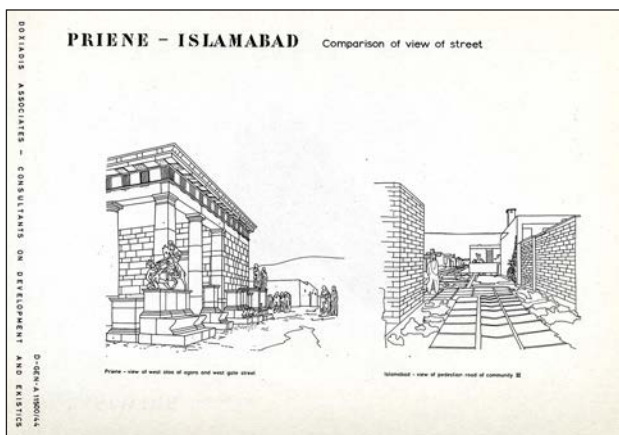
In his plan for the small industrial town of Aspra Spitia ('White Houses'), Doxiadis created a small town of one- or two-storied houses, where the scale of the buildings and the city recreated those of typical Greek

villages – the idealization of which had been codified by architects of the modern movement, e.g., Le Corbusier and Pikionis (Tournikiotis 2009: 211; Philippidis 2015: 325; Theocharopoulou 2010: 126–29).<sup>43</sup> The L-shaped plan responded to the contours of the site – the short leg delimited by the sea and the long leg flanked by two hills – and contained four neighbourhoods, each surrounded by a peripheral road, with cul-de-sacs providing access to each of the neighbourhoods at selected locations (Fig. 14). The shopping, business, civic and administrative centre of the settlement was set up at the junction of the two legs of the L, while the recreational and tourist facilities were located along the waterfront. The idea was to make an intervention that was appropriate to the landscape and sensitive to nature; for instance, existing olive trees were integrated in the designs of front yards, streets and plazas. The twelve standardized but different house plans could be enriched with a variety of elements, added later by the inhabitants, to achieve diversity and individuality, while the majority of the stone walls of the houses were whitewashed – prompting the appellation 'aspra spitia', modern Greek for 'white houses' – thus securing a unified result.<sup>44</sup>

For both projects Doxiadis drew direct analogies to ancient Greek cities, in, for example, his presentation 'The Ancient Greek, and the City of the Present' and the accompanying exhibition for the 6th International Congress of the European Cultural Foundation in May 1964. The plan of Islamabad's Community Class V was juxtaposed to the plan of ancient Athens, presented at the same scale (Fig. 13).<sup>45</sup> A perspectival view of a pedestrian road of Islamabad's Community Class III was compared to a perspectival view of a road in Priene (350 BCE) (Fig. 15).<sup>46</sup> Equally, plans of Aspra Spitia, Olynthus (400 BCE) and Priene (350 BCE) were presented together on the same scale (Fig. 16).<sup>47</sup>



**Figure 14:** View of a cul-de-sac in Aspra Spitia (July 2014).  
© Mantha Zarmakoupi.



**Figure 15:** Perspectival view of a pedestrian road of Islamabad's Community Class III compared to a perspectival view of a road in Priene (350 BCE) that featured in the presentation and accompanying exhibition, entitled *The Ancient Greek City and the City of the Present*, for the 6th International Congress of the European Cultural Foundation (Athens, May 1964). Constantinos A. Doxiadis Archives, File 2701, D-GEN-A 11500/44. © Constantinos and Emma Doxiadis Foundation.

Diagrams drew parallels between the average of the population and area of the ancient Greek city and that of cities of other ages,<sup>48</sup> while plans juxtaposed the traffic of contemporary Athens (1964) to that of ancient Priene (350 BCE) and the public spaces of Ancient Greek cities to those cities of other ages. Such comparisons were used to

evaluate the high densities in contemporary public and private spaces and highlight that the present-day city has lost its human dimensions.<sup>49</sup> Embracing both the human scale and the larger than human scale imposed by industrialization, Doxiadis concluded that contemporary cities must be an amalgamation of the two scales — the human scale, as exemplified in ancient Greek cities, and the scale of the machine age.<sup>50</sup> The study of ancient Greek cities was thus initiated to provide further data for the comparative analysis of the ancient and modern city and the paradigmatic relationship of the two.

### From the 'Ancient City' to the Ancient Greek Cities Project

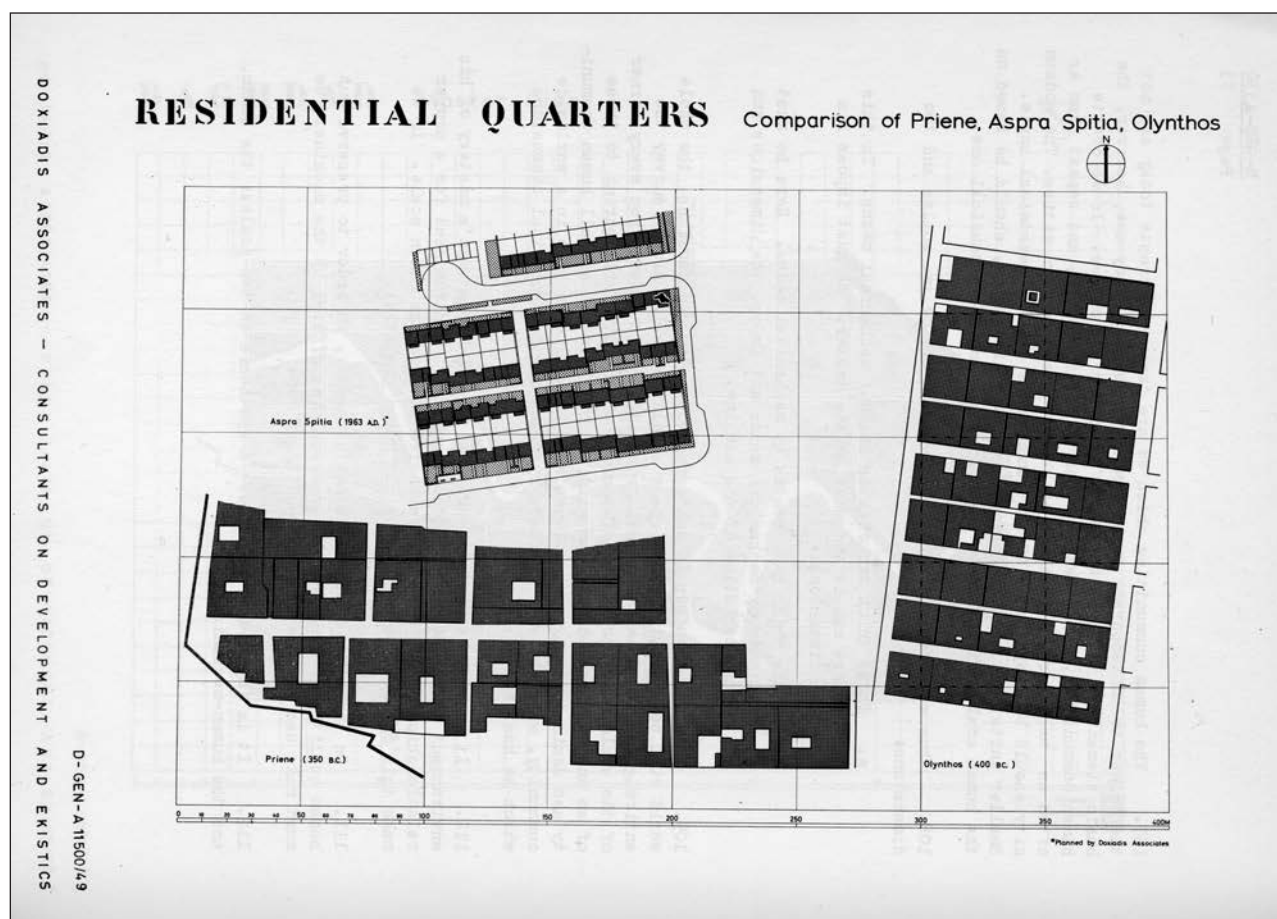
The intra-office correspondence on the program from 1964, the year Doxiadis decided to initiate the distinct research program on the Ancient City, until 1968, the year that the research program on Ancient Greek Cities — as it is commonly known — officially started, shows that as the study of the ancient city progressed the concept and scope of the program changed. Already by the end of 1965, Doxiadis noted that the program must be expanded, so that the study of the settlements of the past may be conducted with 'purely scientific methods':

[I]n order to achieve the goal of the study of the settlements of the past and learn from them (i.e. the settlements of the past) what are reasonable sizes in the pre-industrial period, which changes entirely the parameters of the problem, it will be necessary to study with purely scientific methods as many periods and as many settlements with a precise methodology, which will allow us to compare the similar to the dissimilar and create common rules that pertain to all settlements and through them examine the subrules that affect seasons, geographical areas, etc.<sup>51</sup>

While the program progressed and its duration was extended from year to year, the internal political situation in Greece, namely the dictatorship that prevailed in April 1967, had an effect that was in fact beneficial for the project's development. The dictatorship's removal of archaeologists and historians from their jobs in the Greek Archaeological Service and at the university offered an ideal workforce for the project. In 1968 Doxiadis invited the archaeologists and historians that were removed from their jobs to become the paid researchers of his project on Ancient Cities — no longer Ancient City — and he secured funding from the Ford Foundation for their payment.<sup>52</sup>

Doxiadis had stressed the importance of the contribution of an archaeologist and an architect/archaeologist from the beginning of the project.<sup>53</sup> Indeed, young archaeologists had worked for the project since 1963, following the initiation of the distinct program on the Ancient City.<sup>54</sup> Doxiadis had also intended to hire experienced archaeologists and architects involved in archaeological projects; for instance, in 1964 he mentions that it would be good to hire Ioannis Traulos — a prominent architect and architectural historian involved in





**Figure 16:** Plans of Aspra Spitia, Olynthus (400 BCE) and Priene (350 BCE) that featured in the presentation and accompanying exhibition, entitled *The Ancient Greek City and the City of the Present*, for the 6th International Congress of the European Cultural Foundation (Athens, May 1964). Constantinios A. Doxiadis Archives, File 2701, D-GEN-A 11500/49. © Constantinios and Emma Doxiadis Foundation.

numerous excavations, most notably of the Athenian Agora – on a part-time basis.<sup>55</sup> The internal political situation thus enabled him to employ the skilled research personnel that he intended, including Ioannis Traulos.

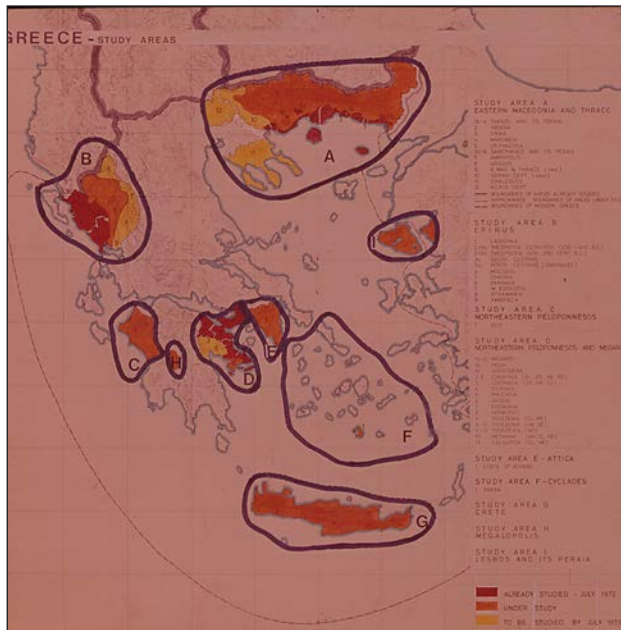
The participation of experienced archaeologists and historians in the project was extremely valuable for the development of the project. The researchers embraced Doxiadis's theory of ekistics and attempted to tackle the ekistic conditions of ancient Greek cities. Doxiadis closely followed their research, reading reports and drafts of their manuscripts and commenting on the difficulties they encountered.<sup>56</sup>

### A Novel Approach to the Study of Ancient Greek Cities

While Doxiadis's main purpose with the study of ancient cities was to provide the tools to design the city of the present, the research program he developed was innovative in the study of ancient cities. This was the first systematic interdisciplinary study of ancient Greek cities that attempted to tackle the social, economic and ecological factors underpinning their creation, development and operation (Fig. 17).<sup>57</sup> The research output of the program was 24 published volumes (Figs. 1–2),<sup>58</sup> while 12 completed monographs remained unpublished and can be consulted in manuscript form in the Doxiadis Archives.<sup>59</sup>

The introductory volume by Arnold Toynbee contextualized the geographical and political structure of the Greek city-state – the built-up area of the city, the rural area beyond the city walls and the interdependence of the two. The geographical structure of a city-state included an area beyond the city limits, which normally contained minor towns and villages that were politically dependent on the city-state. Toynbee recognised that the political dispensation of the city-state was not the result of a particular kind or kinds of terrain (Toynbee 1971: 3–8) and addressed the social and cultural factors underpinning the political and geographical structure of the city-state (Toynbee 1971: 27–40). He provided a historical framework for the study of ancient Greek cities that tackled the ways in which political, social and economic factors as well as the physical geography of the Mediterranean basin affected the ekistic conditions of Greek cities and underpinned decisions of their planning (e.g., Toynbee 1971: 62–91 ['Hellenic town-planning']). Toynbee had advanced the idea that the environment was insignificant as a factor in the rise of civilizations in the first volume of his twelve-volume work *A Study of History* (Toynbee 1934–61: vol. 1, 249–71) – an idea that he revised in his posthumously published book *Mankind and Mother Earth* (Toynbee 1976), where he intended to provide 'a retrospective survey of the history, to date, of the encounter between





**Figure 17:** Map of Greece showing the areas the program covered. Constantinos A. Doxiadis Archives, Photographs, File 13858. © Constantinos and Emma Doxiadis Foundation.

Mother Earth and Man, most enigmatic of all her children' (Toynbee 1976: 18). His plea for ecological restraint was shaped in the 1960s and 1970s (McNeill 2014: 447–49), while participating in the Delos Symposia, and the introductory volume to the AGC project signals a shift in his approach.

The second volume, by Doxiadis (1972b), presented the geographical and chronological scope, organization and presentation as well as the aims of the program.<sup>60</sup> Doxiadis analysed the methodological diagram underpinning the structure of the case studies, including a questionnaire that addressed critical issues and questions about the ancient settlements and their surrounding areas.<sup>61</sup> These were the questions that the researchers of the project were called to answer in the case studies.<sup>62</sup> The issues and questions were divided into five basic categories: Nature, Man, Society, Shells, and Networks, which formed the backbone of each study (Figs. 18, 19). These categories are the five elements of Doxiadis's theory of ekistics (Doxiadis 1968), which he attempted to integrate in the research on ancient Greek cities. If Toynbee laid the historical framework for the study of the Greek city-state, Doxiadis shaped the methodology of the research.

Alongside the methodological diagram and questionnaire, which stated the questions that researchers would investigate, relevant guidelines were developed for the organization and presentation of the designs used in the projects, such as the standardisation of diagrams as well as graphic symbols in the studies (Figs. 20, 21).<sup>63</sup> It is specified that not only the scale and style should be the same but that also 'each symbol should represent for all researchers the exact same concept under the full and exact wording'.<sup>64</sup> The use of a codified visual language with standardised graphic symbols and diagrams is something Doxiadis had already introduced since the 1940s,

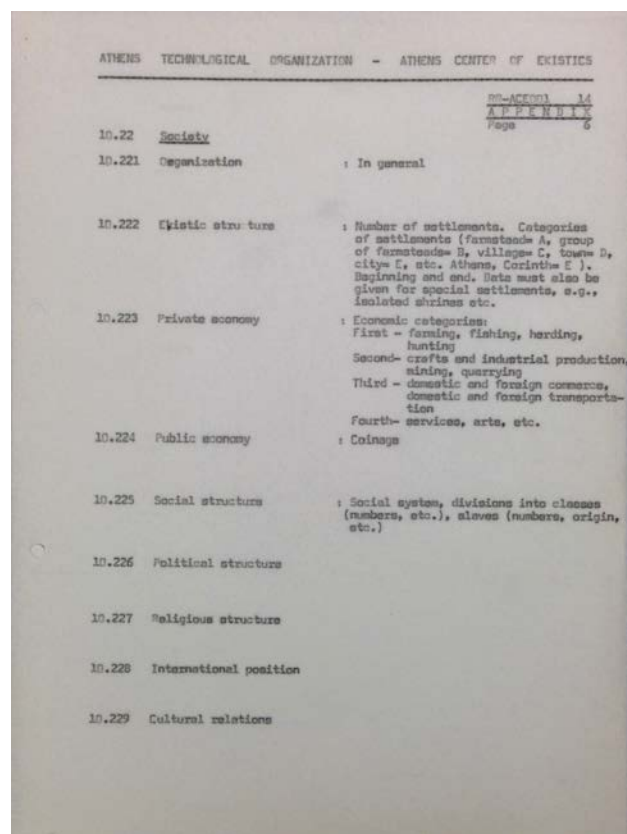
ATHENS TECHNOLOGICAL ORGANIZATION - ATHENS CENTER OF EKISTICS		
		RR-ACE001 14
		APPENDIX
		Page 5
<b>10.2 EKISTICS OF REGION</b>		
10.21	<b>Man</b>	1
10.211	Description	1 Race, descent, origin, etc.; notices, persons from elsewhere, etc.
10.212	Health	
10.213	Family	1 Number of members, organization (simple, patriarchal, etc.)
10.214	Population	1 Number of persons at different times in the period.
10.215	Distribution	1 Distribution in various areas of the region, i.e. so many persons in the plain, so many in the mountains, etc. (Investigate whether the figures can be of use in 10.226, Political Organization).
10.216	Density	1 Density of population in various areas of the region.
10.217	Occupations	1 Numbers of herdsmen, farmers, merchants, artisans, warriors, craftsmen. Distribution in the region. (Investigate whether the figures can be of use in 10.226, Political Organization).

**Figure 18:** Excerpt from the methodological diagram that Doxiadis devised for the AGC case studies, analysing the category of 'Man'. Constantinos A. Doxiadis Archives, File 19280, RR-ACE001 14, Appendix p. 5. © Constantinos and Emma Doxiadis Foundation.

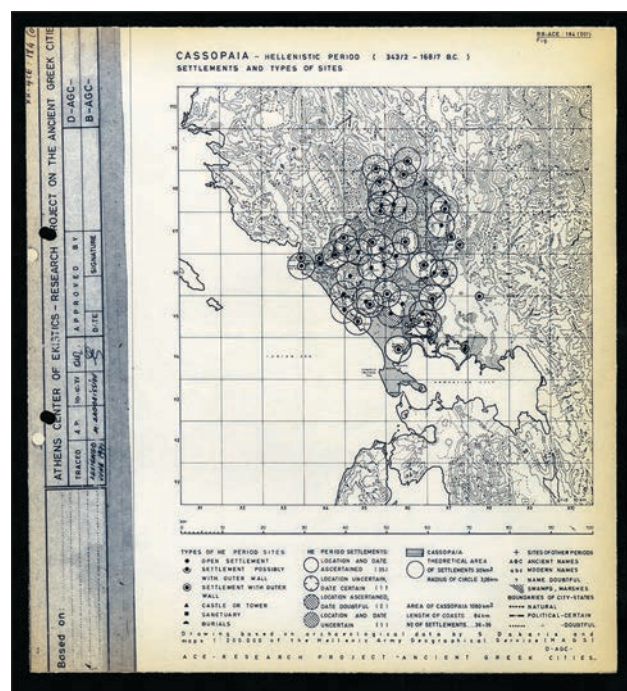
in *The Sacrifices of Greece in the Second World War* (Doxiadis 1946b).<sup>65</sup>

The parameters, set by Doxiadis, were not only confined to the structure of the studies and the types of drawings, diagrams and symbols as well as the concepts entailed in the graphic symbols, but also in the use of ancient Greek language in connection with the research that was being conducted. For the project, Dimitris Maronitis compiled a dictionary of ancient terminology related to settlements, and specifically to the science of ekistics,<sup>66</sup> 'to serve researchers who study ancient Greek settlements, to the extent that the dictionary will gradually provide a codified corpus of terms that they need'.<sup>67</sup> The creation of a common scientific language in relation to the terminology as well as the graphic representation used by scholars of different disciplines, where words and symbols 'should represent for all researchers the exact same concept under the full and exact wording' is one of the innovations and achievements of the project.

The subsequent twenty-two volumes tackled the ekistic conditions of the case studies and provided an overview of ancient Greek cities, addressing the questions set in Doxiadis's methodological questionnaire and employing the standardised visual language. All volumes presented analogous analyses of the geography, history and ekistics of the regions and settlements from the Palaeolithic to the Roman period, and featured homogenous presentations of city plans (Figs. 22, 23). Doxiadis's theory of



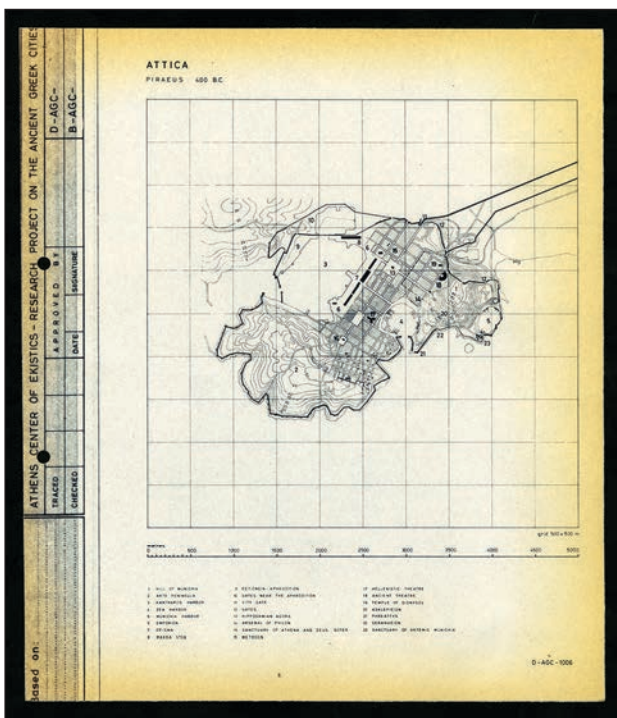
**Figure 19:** Excerpt from the methodological diagram that Doxiadis devised for the AGC case studies, analysing the category of ‘Society’. Constantinos A. Doxiadis Archives, File 19280, RR-ACE001 14, Appendix p. 6. © Constantinos and Emma Doxiadis Foundation.



**Figure 20:** Plan of Cassopaia that was used in volume four of the AGC Project (*Cassopaia and the Elean Colonies*, S. Dakaris 1971), in which agreed-upon symbols codify information about the settlement. Constantinos A. Doxiadis Archives, File 22456, RR-ACE: 184 (001). © Constantinos and Emma Doxiadis Foundation.



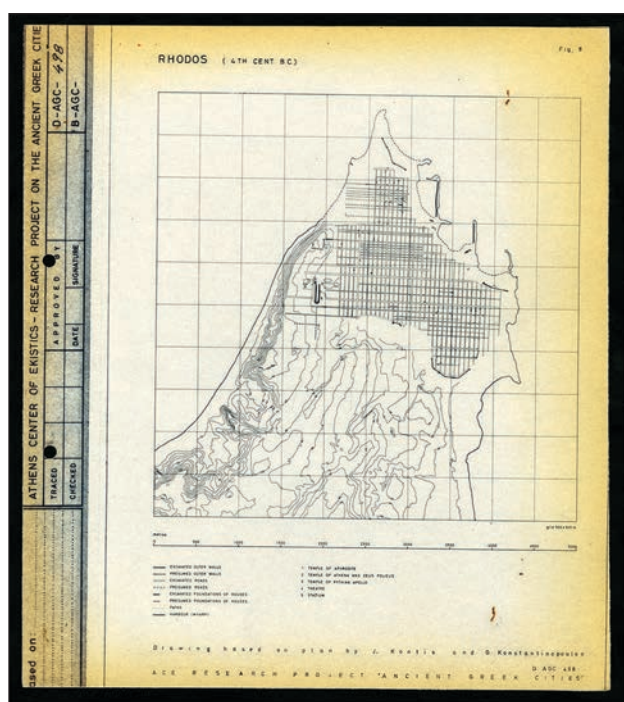
**Figure 21:** Plan of Thasos and its Peraia that was used in volume five of the AGC Project (*Thasos and Peraia*, D. Lazaridis 1971), in which agreed-upon symbols codify information about the settlement. Constantinos A. Doxiadis Archives, File 22456, RR-ACE: 184 (001). © Constantinos and Emma Doxiadis Foundation.



**Figure 22:** Plan of Attica on a grid 500 x 500 m that was used in volume twenty-one by M. Petropoulakos and E. Pentazos (*Attica: Ekistic Data – Initial Report*, 1973). Constantinos A. Doxiadis Archives, File 22456, D-AGC – 1006. © Constantinos and Emma Doxiadis Foundation.

Ekistics underpins the organization of the studies. The researchers of the program structured their analyses of ancient regions and settlements addressing the five elements of the theory: 1) geography and climate (nature);





**Figure 23:** Plan of Rhodes on a grid 500 x 500 m. Constantin A. Doxiadis Archives, File 22456, D-AGC — 498. © Constantin and Emma Doxiadis Foundation.

2) population figures and the organization of the population (man); 3) political and social structures (society); 4) private/public, religious, entertainment and trade buildings (shells); and 5) roads and nodal points of trade and communication, water supply, sewage systems and defence works (networks). Additionally, ancient Greek cities were not analysed as static settlements, but their development from the Palaeolithic to the Roman period was addressed. The collection of data for such a wide range of issues related to the creation, development and operation of ancient Greek settlements was novel in the field of ancient urban studies.

The project's emphasis on the social, economic and environmental aspects of ancient Greek settlements and its commitment to the study of their development over the *longue durée* raise questions about its relation to the *Annales* School that emerged in the late 1920s around the journal *Annales d'histoire économique et sociale*. The *Annales* School had a bold agenda of a 'total history' that embraced all the social sciences, including environmental history. Historians of the *Annales* School were concerned with the impact of the physical environment on the development of human society. Their intellectual endeavour has been paralleled with that of the post-war environmental historians in the States (Grove and Damodaran 2006: 4499–500; Locher and Quenet 2009: par. 17–26; contra: Massard-Guilbaud 2002; Massard-Guilbaud 2007: 30–32), which shaped the environmental concerns of Doxiadis and other participants of the Delos Symposia (Pyla 2002: 111–148; Pyla 2009). Although Arnold Toynbee's early approach to the environment had attracted severe criticism by historians of the *Annales* School (Febvre 1936: 581–602; Gourou 1949), environmental historians now recognise that, in his later work, he took account of environmental change and sought

to relate it to history (Hughes 2006: 79; Grove and Damodaran 2006: 4497–498; McNeill 2014). Informed by the post-war discourse on environmental history in the States and the new ecological thinking of Arnold Toynbee, the methodology of the AGC project resonated in the approach of the *Annales* School but there was no contact or direct influence between the two. The first volume of *Annales d'histoire économique et sociale* dedicated to ancient history was in fact published in 1982 (*Annales* 37(5/6)).<sup>68</sup>

### The Legacy of the AGC Project

Large research projects were subsequently established in Germany in the 1980s and in Denmark in the 1990s.<sup>69</sup> These are the well-known — in the field of classical studies — research programmes of Wolfram Hoepfner and Ernst-Ludwig, the Schwandner Haus und Stadt in Germany, and of Mogens Herman Hansen, the Copenhagen Polis Project in Denmark. The rationale and objective of the Copenhagen Polis Project is very different from the AGC project, as its purpose was to better understand the social and political system of the Greek city-state. The project tackled the geographical structure of the city-state (cf. Toynbee 1971:1–26), but was not concerned with the ecology and urban form of the city-state. The project centred upon the concept of 'city-state' and produced a series of collective volumes on issues concerning its regional, social and political organization, as well as the authoritative inventory of archaic and classical poleis (Hansen and Nielsen 2004) — a complete list of Greek city-states in the archaic and classical periods.<sup>70</sup> Hansen's project tackled contemporary questions about the notion of the State that prevailed in European historiography in the 1990s (Guéry 1997; Ismard 2015: 169–173).

The research programme of Wolfram Hoepfner and Ernst-Ludwig Schwandner, *Haus und Stadt*, is quite close to the logic of Doxiadis's research project — not in relation to the epistemological approach to the study of ancient cities but regarding its focus on the analysis of the built form and its underpinning design principles. The programme initially began in 1974 with the initiative of Hoepfner and continued in cooperation with Schwandner until the end of the 20th century. Its aim was to analyse the ways in which values of democracy underpinned the urban and architectural design of classical Greek cities<sup>71</sup> — a very different starting point from that of the research project of Doxiadis. Hoepfner and Schwandner's programme used a series of case studies to relate the architectural and urban expression of the ancient Greek city-state to its social and political organisation, building on the paradigmatic link between political philosophy and town planning exemplified in the ideas of Hippodamos of Miletos, who lived in the fifth century BCE (Zenzen 2015: 81–83).

Hoepfner and Schwandner favoured an analysis of urban and architectural form and were not interested in questions concerning the environmental systems and communication networks of ancient Greek cities over the *longue durée*. Similarly to Doxiadis's project however, Hoepfner and Schwandner brought together archaeologists, philologists, historians and sociologists to examine the social



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TELEGRAMMADRESSE: DAINST BERLIN

DEN 25. Februar 1975/Gr

Herrn  
Dr.-Ing. C. A. D o x i a d i s  
Athens Center of Ekistics  
P.O.B. 481

A t h e n s 136/GRIECHENLAND

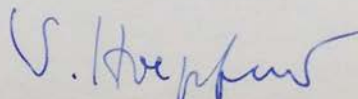
Sehr verehrter Herr Doxiadis,

als Anlage schicke ich Ihnen den Ergebnisbericht zu unserem 1974 veranstalteten Kolloquium "Die antike Stadt". Wie Sie vielleicht von Herrn Psomopoulos gehört haben, spielte dabei Ihr Forschungsprogramm "Ancient Greek Cities" eine große Rolle, ist es doch das einzige Projekt zu diesem Thema, das auf einer fundierten theoretischen Grundlage basiert und mit großem Erfolg in die Tat umgesetzt wurde. Ganz besonders interessant ist dabei nicht nur die Fülle und Gliederung neuen Materials, sondern auch die grundlegenden Ausführungen von J. Toynbee. Wir hoffen, daß es Ihnen gelingt, alle Ziele dieses Projekts zu erreichen.

Unser eigenes Forschungsprogramm ist den Möglichkeiten entsprechend bescheiden: Wir wollen in den nächsten Jahren den Bereich des Wohnens in der klassischen Polis möglichst umfassend untersuchen. Daran sollen nicht nur Bauforscher, sondern auch Archäologen und Historiker beteiligt werden. Wir freuen uns sehr, daß Herr Dakaris seine Mitarbeit zugesichert hat. Falls es Sie interessiert, möchte ich Ihnen gern gelegentlich das genaue Programm unseres Vorhabens zusenden.

Ich hoffe, daß es Ihnen gesundheitlich gut geht und verbleibe

mit den besten Grüßen  
- bitte auch an Herrn Psomopoulos -  
Ihr



(Dr.-Ing. W. Hoepfner)

1 Anlage

**Figure 24:** Letter from Hoepfner, dated February 25, 1975. Constantinos A. Doxiadis Archives, File 22360. © Constantinos and Emma Doxiadis Foundation.

and political factors behind the architectural and urban development of Greek cities. The research programme adopted a common scientific and graphic language, as the AGC project had done.

The affinity of the organization of the research programme of Hoepfner and Schwandner with the organization of Doxiadis's program was not accidental. Hoepfner had presented a paper on the city of Herakleia Pontike (on the south coast of the Euxine, modern Turkey) in a conference on ancient cities organized by the Athens Center of Ekistics in 1971, and his contribution was published in an issue of the journal *Ekistics* (Hoepfner 1972) – where the annual progress report of Doxiadis's project on ancient cities was also published. In May 1974, Hoepfner organized a conference on the ancient city in Berlin. In a letter dated on February 25, 1975, he informed Doxiadis about the conference and sent the minutes of the meeting, in which Schwandner (Schwandner 1974) had in fact presented the AGC project (Fig. 24).

In this letter Hoepfner stressed that

your project 'Ancient Greek Cities' played a big role during the conference, because it is the only research work on the subject, based on established theoretical foundations and applied in practice with great success. Particularly interesting are not only the completeness and organization of the new material, but also the presentation of A. Toynbee who laid the foundation for the research.<sup>72</sup>

In the same letter he also informs him about his own research program, which

is limited depending on the means: during the next years we are going to examine comprehensively, in so far as this is possible, the issue of housing in the classical city. The subject will be studied not only by architects-researchers, but also by archaeologists and historians. . . . In case you are interested, I could send you our precise program.<sup>73</sup>

Doxiadis, who had been ill since 1972, congratulated Hoepfner's initiative, asking to keep him informed on the progress of the research project and asked his colleagues to maintain contact with him.<sup>74</sup> The death of Doxiadis in June 1975, however, halted the activity of the AGC project, and the two research projects had no scientific exchange. After Doxiadis's death, the AGC project continued until 1977 but was diminished thereafter due to a lack of resources.

Diverse questions on ancient Greek cities continue to inspire large-scale research projects,<sup>75</sup> but no other project on ancient Greek cities has attempted to tackle the environmental factors, together with the social and economic ones, underpinning the creation, development and operation of ancient Greek cities.<sup>76</sup> Furthermore, some of the ideas that Doxiadis put forth for the AGC project – for example, the concept of the city as nodal point of a supra-regional network and the refined notion of human scale that included the six sensory modalities (visual, auditory, kinaesthetic, olfactory, thermal and tactile) of human's interaction with

space (such as the human bubble) – foreshadowed later developments in the field of archaeology. This kind of analyses highlight the importance of trade routes and systems of communication as well as the subjectivity of human experience in the study of ancient settlements.<sup>77</sup> The field of archaeology, which was undergoing a major transformation in the 1960s and 1970s, tackled such issues only after the advent of post-processual, or interpretative, archaeology in the 1980s.<sup>78</sup> Although Doxiadis was not concerned with contemporary debates in archaeology, the AGC project went beyond his immediate goals and proposed a novel approach to the analysis of ancient Greek cities.

### Competing Interests

The author declares that they have no competing interests.

### Acknowledgements

I would like to thank Giota Pavlidou, the archivist of Doxiadis Archives, for her assistance during my research at the archives, as well as Dimitris Philippidis and Kostas Tsiambaos for discussing an earlier version of this paper.

### Notes

<sup>1</sup> Doxiadis had been planning the office since 1951, while still in Australia. For the early career of Doxiadis, see Philippidis (2015: 11–19, 213–228).

<sup>2</sup> For the housing projects in Iraq (1955–58), see Pyla (2008a and 2008b) and Theodosios (2008). For the restructuring of the plan of Homs in Syria (1959), see Pyla (2002: 67–70). For the planning of the new capital in Pakistan (1960), see Khan Mahsud (2007 and 2008); Daechsel (2013: 87–99); Daechsel (2015: 106–147); and Philippidis (2015: 244–273). Generally, see Pyla (2002: 55–74).

<sup>3</sup> *DA Newsletter* 3(11), 'Athens Center of Ekistics', 38–48: 38.

<sup>4</sup> Doxiadis Archives, File 19087, S-D 2120, 3.4.1960.

<sup>5</sup> The Congrès internationaux d'architecture moderne (CIAM), or International Congresses of Modern Architecture, was an organization founded in Switzerland in 1928, intended to advance both modernism and internationalism in architecture.

<sup>6</sup> See Mumford (2000: 225–238) on CIAM's post-war debate on the habitat. On the ways in which Doxiadis's approach related to this debate, see Pyla (2002: 46–50) and Khan Mahsud (2010: 10–12).

<sup>7</sup> A list of the published volumes and unpublished manuscripts can be found at the Doxiadis website, <http://www.doxiadis.org/>. See also notes 58 and 59.

<sup>8</sup> *Ekistics* 31(182), January 1971, entitled 'Cities of the past: their relevance today'; *Ekistics* 35(206), January 1973, entitled 'Cities of the past: the Greek city-states'.

<sup>9</sup> In January 1962, Doxiadis states that he will be leading two branches of research that year: 1, research on the Ancient Greek cities, and 2, research on his books *Ekistics* and *Ecumenopolis*. Doxiadis Archives, File 22075, S-D 3615, *AGC Beginning and evolution of the project 1962–1966* (13.1.62).

<sup>10</sup> Doxiadis Archives, File 18552. Published in 1937 (Doxiadis 1937a).

- <sup>11</sup> Doxiadis Archives, File 22075, S-D 3615, *AGC Beginning and Evolution of the Project 1962–1966* (13.1.62); *Application for approval of a research project* (27.3.62).
- <sup>12</sup> Doxiadis Archives, File 22075, S-D 7082, *Μελέτες Αρχαίων Ελληνικών Πόλεων* [Studies of Ancient Greek Cities] (7.1.64). See also Doxiadis Archives, File 22075, S-D 7656, *Σκέψεις πάνω στη συνέχεια της μελέτης για τις αρχαίες πόλεις* [Thoughts on the continuation of the research on ancient cities] (14.5.64).
- <sup>13</sup> Doxiadis Archives, File 22075, S-D 7082, *Μελέτες Αρχαίων Ελληνικών Πόλεων* [Studies of Ancient Greek Cities] (7.1.64): 3.
- <sup>14</sup> Citations are from the publication of his thesis in English in 1972.
- <sup>15</sup> Doxiadis Archives, File 22075, S-D 7082, *Μελέτες Αρχαίων Ελληνικών Πόλεων* [Studies of Ancient Greek Cities] (7.1.64).
- <sup>16</sup> See related Doxiadis (1964a). The revised text was published in English in the proceedings of the conference (Doxiadis 1967). A synopsis of this text was also published in English (Doxiadis 1964b) and in Greek (1964c). The full text is accessible at Doxiadis Archives, File 2681 (Greek), File 2701 (English).
- <sup>17</sup> The first discussions begin in 1958. Doxiadis Archives, File 2761, *Discussion between D. J. Tyrwhitt and Piperoglou on the Subject of a Conference in Delos* (5.8.58).
- <sup>18</sup> Documentation of the Delos Symposia can be found in Doxiadis Archives, File 2761. For a general discussion on the Delos Symposia, see Richards (2012) and Wigley (2001).
- <sup>19</sup> Doxiadis Archives, File 32298, *Η Διακήρυξη της Δήλου. The Declaration of Delos One* (1963). On the Symposia of Delos see Pyla (2002: 114–121); Wigley (2001: 89–92); Richards (2012: 172–173); and Philippidis (2015: 164–168).
- <sup>20</sup> For instance, the participants of the first Symposium were Charles Abrams (USA), Edmund N. Bacon (USA), Stewart Bates (Canada), Pedro Bidagor Lasarte (Spain), A. K. Brohi (Pakistan), C. S. Chandrasekhara (India), Walter Christaller (Germany), Jacob L. Crane (USA), Richard Llewellyn Davies (Great Britain), C. A. Doxiadis (Greece), Leonard Duhl (USA), O. E. Fischnich (UN), Lyle C. Fitch (USA), R. Buckminster Fuller (USA), Clifford Furnas (USA), S. Giedion (Switzerland), J. Gorynski (Poland), Eiichi Isomura (Japan), Sture Linner (UN), Mohamed S. Makiya (Iraq), Edward S. Mason (USA), Sir Robert Matthew (Great Britain), Margaret Mead (USA), Marshall McLuhan (Canada), Wacław Ostrowski (Poland), Alfred R. Otoo (Ghana), David Owen (UN), Charles H. Page (USA), E. Papanoutsos (Greece), Shafic H. El-Sadr (UAR), Carl Schwyer (Germany), C. H. Waddington (Great Britain), Barbara Ward (Lady Jackson) (Great Britain) and Sir Robert Watson-Watt (Great Britain). The participants of the first Symposium of Delos were presented in the journal *Ekistics* 16(95) (October 1963): 218–234.
- <sup>21</sup> Doxiadis Archives, File 18645, *C. A. Doxiadis Greek Translation from Le Corbusier's 'Précisions' (1931–1935)*.
- <sup>22</sup> Doxiadis Archives, File 2761, *AEM Organization 1958–1968 (Folder I), 1958–1963 (1964), 1–222 (1)*: 1. Subject: Discussion between D. J. Tyrwhitt and Piperoglou on the subject of a conference in Delos. Dated 5.8.58.
- <sup>23</sup> Doxiadis Archives, File 2761, *AEM Organization 1958–1968 (Folder I), 1958–1963 (1964), 1–222 (1)*: 75. This text was published in the proceedings of the first Symposium of Delos, which presents the 4th CIAM congress as a comparable effort of a previous generation (Tyrwhitt 1963: 263).
- <sup>24</sup> Spelled quitest.
- <sup>25</sup> Spelled quitest.
- <sup>26</sup> Text reads inhabitants.
- <sup>27</sup> Doxiadis Archives, File 22831, *Book on Delos Symposia (working file)*: 3–4. Such ideas were echoed in the introduction of Gwen Bell and Jacqueline Tyrwhitt to their edited book *Human Identity in the Urban Environment* (Bell and Tyrwhitt 1972: 15). See discussion in Richards (2012: 175).
- <sup>28</sup> See presentation of the participants of the first Symposium of Delos as ‘The Delians’ in the journal *Ekistics* 16(95) (October 1963): 218–234.
- <sup>29</sup> Doxiadis Archives, File 2761, *AEM Organization 1958–1968 (Folder I), 1958–1963 (1964), 1–222 (1)*: 7–9, *A proposal for a conference of planners on the island of Delos for the formulation and declaration of the Charter of Delos*: 8.
- <sup>30</sup> For a brief introduction to the history of Delos, see Bruneau and Ducat (2005: 31–48).
- <sup>31</sup> Doxiadis Archives, File 2761, *AEM Organization 1958–1968 (Folder I), 1958–1963 (1964), 1–222 (1)*: 7–9, *A proposal for a conference of planners on the island of Delos for the formulation and declaration of the Charter of Delos*: 8.
- <sup>32</sup> In the same year (1965) Doxiadis invited Arnold Toynbee to comment on the methodology of the Ancient Greek Cities research project. Doxiadis Archives, File 22343, RR-GEN-A 74, *Remarks and suggestions by Dr. Toynbee concerning the ancient Greek city-states* (5.08.65). See also foreword by Doxiadis to Toynbee's introductory volume to the AGC project (Toynbee 1971: iii).
- <sup>33</sup> Doxiadis Archives, File 22075, C-DA 5755 (14.09.1966).
- <sup>34</sup> ‘... να δημιουργηθεί μια συλλογή... με σχέδια απ’ την αρχαία πόλη, σε σωστή κλίμακα, με σωστή παρουσίαση, ... για να αποδείξω πως μπορούμε να πάρουμε απ’ την αρχαία πόλη στοιχεία για την σημερινή’. Doxiadis Archives, File 22075, S-D 7082, *Μελέτες Αρχαίων Ελληνικών Πόλεων* [Studies of Ancient Greek Cities] (7.1.64): 2.
- <sup>35</sup> Doxiadis Archives, File 22075, S-D 7082, *Μελέτες Αρχαίων Ελληνικών Πόλεων* [Studies of Ancient Greek Cities] (7.1.64): 2.
- <sup>36</sup> Doxiadis Archives, File 22075, S-D 7154, *Μελέτη για την Αρχαία Πολιτεία* [Studies of Ancient Greek Cities] (14.1.64): 1–2.
- <sup>37</sup> See also discussion in Rogers (2012: 175–180).
- <sup>38</sup> ‘... θα βγάλουμε μερικούς γενικούς κανόνες που θα μας επιτρέψουν να κάνουμε μια παρουσίαση του εξής τύπου:  
α. Σε μέγεθος η αρχαία πόλη ήταν αυτή, σε εμβαδά 4 τ. χλμ. ή 5 έως 7.



β. Μέγιστό μήκος τόσο. Ο άνθρωπος μπορούσε να τη διασχίσει έτσι.

γ. Μέγιστη και ελάχιστη πυκνότητα τόσο, έτσι ώστε ο άνθρωπος ζούσε σε μια κλίμακα αυτού του τύπου που ανταποκρίνεται στην σημερινή κλίμακα π.χ. της Μυκόνου, ή της Ύδρας ή κάποιας άλλης πολιτείας που θα βρούμε να δώσουμε σαφή εικόνα προς τι ανταποκρίνεται. Με αυτό τον τρόπο θα περιγράψουμε την πόλη. Θα δούμε όχι σαν στατιστικό μέσο μέγεθος το μέσο των παραδειγμάτων που αναφέρουμε, αλλά σαν εννοιολογικό μέσο μέγεθος το μέσο των παραδειγμάτων που αναφέρουμε.<sup>39</sup> Doxiadis Archives, File 22075, S-D 7154: 1–2. Emphasis added. See discussion about the concept of densities in Philippidis (2015: 135–137).

<sup>39</sup> 'Πρέπει να βρούμε έναν τρόπο να την αναβιώσουμε αυτή την κλίμακα στα μεγέθη τα μικρά που οδηγεί στην πόλη κατά τομείς τους οποίους περιβάλλουν μεγάλοι αυτοκινητόδρομοι—σαν στο ISLAMABAD...'. Doxiadis Archives, File 22075, S-D 7154: 2.

<sup>40</sup> For this project see Doxiadis (1965); Yakas (2001); Khan Mahsud (2007, 2008); Costis (2009); Daechsel (2013: 87–99); Daechsel (2015: 106–147); Philippidis (2015: 244–273).

<sup>41</sup> For this project see Simeon (1965); Tournikiotis (2000, 2004, 2009); Kalafati (2012); Pyla (2002: 130–132); Tzonis and Rodi (2013: 175); Philippidis (2015: 321–330). See also Doxiadis Archives, File 36580, *Aspra Spitia: A new Greek city* (undated) and on the Doxiadis website, [http://www.doxiadis.org/Downloads/aspra\\_spitia.pdf](http://www.doxiadis.org/Downloads/aspra_spitia.pdf).

<sup>42</sup> For Doxiadis's analysis of the population and area of ancient Greek cities, see: Doxiadis Archives, File 2701, *The ancient Greek, and the city of the present*: 7–16. The population numbers were based on analyses of archaeologists and ancient historians that had been conducted until then. See discussion of the sources: File 2701, *The ancient Greek, and the city of the present*: 81–82, notes 1–8. Specifically, Doxiadis relied his analysis of the population numbers on the Oxford Classical Dictionary (1949, 1st ed.), lemma 'Population'; Durant (1939: 91 [Corinth]); Freeman (1950: 93 [Corinth], 129 [Miletus]); Hiorns (1956: 31 [Selinus]); Mumford (1961: 164 [Olynthus]); Roussel (1931 [Delos]); Travlos (1960: 72 [Athens]); Wycherley (1962: 14, 27 [Priene]). The areas of ancient Greek cities were based on scaled plans produced by the AGC research project.

<sup>43</sup> For a discussion of Doxiadis's commitment to local vernaculars and the relationship as well as tensions between him and the Egyptian architect Hassan Fathy — a pioneer in sustainable architecture that employed traditional building systems, who worked for Doxiadis Associates in the years 1957 to 1961 — see Pyla (2002: 91–110); Pyla (2007: 30–38); Philippidis (2015: 251–254).

<sup>44</sup> Doxiadis Archives, File 36580, *Aspra Spitia: A new Greek city* (undated).

<sup>45</sup> Doxiadis Archives, File 2701, *The ancient Greek, and the city of the present*: 66.

<sup>46</sup> Doxiadis Archives, File 2701, *The ancient Greek, and the city of the present*: 67.

<sup>47</sup> Doxiadis Archives, File 2701, *The ancient Greek, and the city of the present*: 74.

<sup>48</sup> Doxiadis Archives, File 2701, *The ancient Greek, and the city of the present*: 46–47.

<sup>49</sup> Doxiadis Archives, File 2701, *The ancient Greek, and the city of the present*: 59.

<sup>50</sup> Doxiadis Archives, File 2701, *The ancient Greek, and the city of the present*: 69–77.

<sup>51</sup> 'Για να πετύχουμε το σκοπό της μελέτης των οικισμών του παρελθόντος και να βγάλουμε διδάγματα απ' αυτούς για μεγέθη λογικά στην προμηχανική εποχή η οποία αλλάζει εντελώς πια τα δεδομένα του προβλήματος, θα είναι ανάγκη να μελετήσουμε με καθαρά επιστημονική μέθοδο όσες εποχές και όσους οικισμούς μπορούσαμε με μια συγκεκριμένη μέθοδο που θα μας επιτρέψει να συγκρίνουμε τα όμοια και τα ανόμοια και να βγάζουμε γενικούς κανόνες που ισχύουν για όλους τους οικισμούς και μέσα σ' αυτούς να βλέπουμε τους επί μέρους κανόνες που επηρεάζουν εποχές, γεωγραφικές περιοχές, κλπ.' Doxiadis Archives, File 22343, RR-GEN-A 94, *Settlements of the past* (7.12.65): 1.

<sup>52</sup> See Doxiadis Archives, File 19181. See also Doxiadis Archives, File 22144, SD-ACE 1379, *Αρχαίες Ελληνικές Πόλεις* [Ancient Greek Cities] (5.8.71).

<sup>53</sup> Provision for hiring a young archaeologist as a research associate at the beginning of the research on ancient Greek cities in 1962: Doxiadis Archives, File 22075, S-D 3615 (13.1.62). Provision for hiring a young archaeologist as a research associate for two years for the new distinct program on the 'Ancient Greek City' in 1964: Doxiadis Archives, File 22075, S-D 7656, *Σκέψεις πάνω στη συνέχεια της μελέτης για τις αρχαίες πόλεις* [Thoughts on the continuation of the research on ancient cities] (14.5.64): 2; Doxiadis Archives, File 22075, S-101 74, *Πρόταση σχετικά με την μελέτη των αρχαίων Ελληνικών πόλεων* [Proposal concerning the study of ancient Greek cities]: 1.

<sup>54</sup> The young archaeologists conducting research during this period are Ms. Tsiomi (see: Doxiadis Archives, File 22075, S-D 7083, *Μελέτη ερευνητική «Σύνθεσις στις Αρχαίες Ελληνικές Πόλεις»* [Research study "Composition in Ancient Greek Cities"] (7.1.64): 2) and Ms. Andronikou (see: Doxiadis Archives, File 22075, S-D 7763, *Μελέτη για αρχαίες ελληνικές πόλεις* [Study for ancient Greek cities] (4.6.64).

<sup>55</sup> Doxiadis Archives, File 22075, S-D 7656, *Σκέψεις πάνω στη συνέχεια της μελέτης για τις αρχαίες πόλεις* [Thoughts on the continuation of the research on ancient cities] (14.5.64): 2.

<sup>56</sup> Correspondence with the researchers can be found in Doxiadis Archives, File 22144.

<sup>57</sup> Doxiadis 1972b: RR-ACE: 184, p. vii.

<sup>58</sup> Volumes 1–24 of the AGC program are: vol. 1, *An Eki-stical Study of the Hellenic City-State* (Toynbee 1971); vol. 2, *Method for the Research of Ancient Greek Settlements* (Doxiadis 1972b); vol. 3, *Corinthia — Cleonaea* (Sakellariou and Pharaklas 1971); vol. 4, *Cassopaia*

and the Elean Colonies (Dakaris 1971); vol. 5, *Thasos and Peraia* (Lazaridis 1971a); vol. 6, *Abdera and Dikaia* (Lazaridis 1971b); vol. 7, *Samothrace and its Peraia* (Lazaridis 1971c); vol. 8, *Sikyonia* (Faraklas 1971); vol. 9, *Prehistory of Eastern Macedonia and Thrace* (Theocharis 1971); vol. 10, *Troizenia, Kalaureia, Methana* (Pharaklas 1972a); vol. 11, *Phleiasia* (Pharaklas 1972b); vol. 12, *Epidauria* (Pharaklas 1972c); vol. 13, *Amphipolis and Argilos* (Lazaridis 1972a); vol. 14, *Megaris, Aigosthena, Ereneia* (Sakellariou and Pharaklas 1972); vol. 15, *Thesprotia* (Dakaris 1972); vol. 16, *Maroneia and Orthagoria* (Lazaridis 1972); vol. 17, *Athens: Ekistic Data – First Report* (Traulos, Petropoulakou and Pentazos 1972); vol. 18, *Crete – Stone Age* (Zois 1973); vol. 19, *Ermionis – Alias* (Pharaklas 1973); vol. 20, *Philippoi – Roman Colony* (Lazaridis 1974); vol. 21, *Attiki: Ekistic Data – First Report* (Petropoulakou and Pentazos 1973); vol. 22, *Thera and Therasia* (Sperling 1973); vol. 23, *The Great City of Arkadia* (Petronitis 1973); vol. 24, *Lesvos and its Asia Minor Region* (Kontis 1978).

<sup>59</sup> The 12 unpublished monographs are: *Κρήτη πρωτομινωική εποχή* [Crete Early Minoan Age] (Zois 1975–1978); *Η ενδόχωρα της αιγιακής Θράκης* [The Hinterland of Aegean Thrace] (Lazaridis 1974); *Ηλίσ* [Elis] (Gialouris 1971–1977); *Αργεία – Ασιναιά* [Argeia – Asinaia] (Sakellariou and Pharaklas, 1974–1975); *Αίγινα* [Aigina] (Pharaklas 1975); *Δυτική Λοκρίς* [Western Lokris] (Pharaklas 1976); *Ανατολική Λοκρίς* [Eastern Lokris] (Pharaklas 1976); *Ακαρνανία* [Akar-nania] (Pharaklas 1977); *Η κοιλάδα του Σπερχειού, Μαλίσ-Οιταία-Αινίς* [The Spercheios Valley, Malis-Oitaia-Ainis] (Pharaklas 1977); *Δελφοί* [Delphoi] (Aggelou 1970–1971); *Ελληνικές πόλεις στη νότιο Γαλλία* [Greek cities in Southern France] (Tseklenis 1972); *The Neolithic Age in Greece: A Study of the Earliest Greek Human Settlements* (Shivaji Singh 1970–1971).

<sup>60</sup> See also related files: Doxiadis Archives, File 19280, RR-ACE001 14, *Τελική πρόταση για την διάρθρωση των μελετών για τις αρχαίες ελληνικές πόλεις-κράτη και τις ανάλογες μονάδες* [Final proposal for the organization of the studies on ancient Greek city-states and comparable areas of settlement] (10.04.69); RR-ACE001 14 *Appendix, Questionnaire: Outline for the study of ancient Greek city-state and comparable areas of settlement* (6.05.69). See also Doxiadis Archives, File 22147 (6.09.68–4.06.69).

<sup>61</sup> Doxiadis Archives, File 19280, RR-ACE001 14, *Τελική πρόταση για την διάρθρωση των μελετών για τις αρχαίες ελληνικές πόλεις-κράτη και τις ανάλογες μονάδες* [Final proposal for the organization of the studies on ancient Greek city-states and comparable areas of settlement] (10.04.69); RR-ACE001 14 *Appendix, Questionnaire: Outline for the study of ancient Greek city-state and comparable areas of settlement* (6.05.69). See also Doxiadis Archives, File 22147 (6.09.68–4.06.69).

<sup>62</sup> Doxiadis had developed the methodological diagram in conversation with the researchers and Arnold Toynbee. See Doxiadis Archives, Files 19280, 22343, 22144, and 22456.

<sup>63</sup> See Doxiadis Archives, File 22456, SD-ACE 1189 (29.08.70). S-ACE001 363, *Σχέδια μονογραφιών και*

*προβλήματα έρευνας* [Designs of the monographs and problems of research] (22.12.71). This part of the research was managed by Marika Zagorisiou.

<sup>64</sup> ‘. . . το κάθε σύμβολο να αντιπροσωπεύει για όλους τους μελετητές την ίδια ακριβώς έννοια υπό την πλήρη και ακριβή διατύπωσή της . . .’. Doxiadis Archives, File 22456, S-ACE001 363 *Σχέδια μονογραφιών και προβλήματα έρευνας* [Designs of the monographs and problems of research] (22.12.71): 4.

<sup>65</sup> Otto Neurath, who participated in the 4th CIAM Conference in 1933, is considered the father of what we call today infographics (cf. Neurath 1936 and 1937), and his influence on the use of a codified language in the work of Doxiadis is visible. See Tsiambaos (2012).

<sup>66</sup> Doxiadis Archives, File 19280, RR-ACE001 19 (3.3.70).

<sup>67</sup> Doxiadis 1972b: RR-ACE: 184, p. 3. Doxiadis often codified data and invented new terms in order to describe something in the fewest words in all of his research projects. See his main ‘glossary’: <http://www.doxiadis.org/ViewStaticPage.aspx?ValueId=4311>.

For example IDEA is ‘Isolation of Dimensions and Elimination of Alternatives’.

<sup>68</sup> For a reevaluation of the ideas put forth in this volume, see volume 69, number 3, of the *Annales*, esp. Azoulay 2014.

<sup>69</sup> These two countries continue to host large research projects on ancient cities. Recent projects include the Munich-based project *Die hellenistische Polis als Lebensform*, funded by the German Research Foundation (DFG) (<http://www.poliskultur.de/>), and the Aarhus-based project *Urban Network Evolutions*, funded by the Danish National Research Foundation (<http://urbnet.au.dk>).

<sup>70</sup> A list of the publications can be found at the website of the project: <http://www.copenhagencopoliscentre.info>.

<sup>71</sup> Hoepfner and Schwandner (ed.) (1986 and 1994); Hoepfner and Zimmer (ed.) (1993); Hoepfner et al. (1999).

<sup>72</sup> ‘. . . spielte dabei Ihr Forschungsprogramm ‘Ancient Greek Cities’ eine große Rolle, ist es doch das einzige Projekt zu diesem Thema, das auf einer fundierten theoretischen Grundlage basiert und mit großem Erfolg in die Tat umgesetzt wurde. Ganz besonders interessant ist dabei nicht nur die Fülle und Gliederung neuen Materials, sondern auch die grundlegenden Ausführungen von J. Toynbee’. Doxiadis Archives, File 22360 (25.02.75).

<sup>73</sup> Doxiadis Archives, File 22360. Original letter accompanied with: Σ-AK0001:19/20-3-75. *Συνημμένο 2. Μετάφραση του γράμματος του W. Hoepfner* [Attachment 2. Translation of letter of W. Hoepfner].

<sup>74</sup> Doxiadis Archives, File 22360, C-ACE 20219 (28.03.75).

<sup>75</sup> The most recent project focusing on the ancient Greek city is the project *Die hellenistische Polis als Lebensform*, funded by the German Research Foundation (DFG) and based at the University of Munich (<http://www.poliskultur.de/>; 2005–).

<sup>76</sup> The Aarhus-based project *Urban Network Evolutions* (<http://urbnet.au.dk>; 2015–) aims to address how

'urban networks catalysed societal and environmental expansions and crises in the past' (<http://urbnet.au.dk/about-urbnet/>).

- <sup>77</sup> On network analysis in the fields of archaeology and ancient history, see Malkin, Constantakopoulou and Panagopoulou (2009); Ismard (2010); Malkin (2011); Taylor and Vlassopoulos (eds.) (2015); and Knappett (ed.) (2013)—esp. Knappett (2013), who traces the use of network approaches in archaeology since the 1970s, and Rivers, Knappett and Evans (2013), who address the idea of a site as a 'central place' since the 1970s. On the subjectivity of human experience in the field of archaeology see Hodder and Hutson (2003: esp. 20–44 [ch. 2, 'Processual and systems approaches'], and 156–205 [ch. 8, 'Contextual archaeology']), and most recently Hamilakis (2013, esp. 16–56 [ch. 2, 'Western modernity, archaeology, and the senses']).
- <sup>78</sup> On post-processual archaeology, see Hodder and Hutson (2003, 206–235 [ch. 9, 'Post-processual archaeology']).

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